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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
CELSA, BENNETT M	
ART UNIT	**PAPER NUMBER**
1639	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/596,851	DIAMOND ET AL.	
	Examiner	Art Unit	
	Bennett Celsa	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16,19-38,40,42-58 and 70-76* is/are pending in the application.

4a) Of the above claim(s) *20-23,27,29,34-36,40,44,46-49,51-58,71 and 72* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16,19,24-26,28,30-33,37,38,42,43,45,50,70 and 73-76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/29/04 has been entered.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Status of the claims

Claims 16, 19-38, 40, 42-58 and 70-76 are currently pending.

Claims 20-23,27,29,34-36,40,44,46-49, 51-58 and 71-72 are withdrawn from consideration as being directed to a nonelected invention.

Claims 16, 19, 24-26, 28, 30-33, 37, 38, 42-43, 45, 50, 70 and 73-76 are under consideration.

Election/Restrictions

Applicants responses dated 10/15/01 and 2/28/02 to the prior restriction/election requirements (e.g. Oct. 2 and Dec. 31, 2001) electing Group II (claims 1-15 and 39 later rejoined with Gp II: claims 16-38, 40 and 41) and the following election of species:

a. Species of Method further comprising: copolymerizing 1st and 2nd monomers;

b. Species of dispensing: "liquid" dispensing;

c. 1st Species of determining polymerization performance (or property):

"product"/ "molecular weight";

d. 2nd Species of determining polymerization performance (or property)

"reaction mixture"/ "polymer concentration"; and

e. Species of monomer: "1-octene".

is again acknowledged.

It is NOTED that "polymerizing 2nd monomer" and "polymerizing a 2nd monomer with a 3rd monomer corresponds to non-elected subject matter in view of the election in a. above.

Accordingly, claims 20-23, 27, 29, 34-36, 40, 44, 46-49, 51-58 and 71-72 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to non-elected species, there being no allowable generic claim.

It is noted that new claims 71 and 72 are withdrawn from consideration by election of original presentation (e.g. claims 71 and 72 are drawn to nonelected subject matter).

Withdrawn Objection (s) and/or Rejection (s)

Applicant's amendment has overcome the indefinite rejection of claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 for use of the phrases ***"using the polymerization performance as a figure of merit for planning..." and "using the determination as a figure of merit for planning..." (respectively)***

Applicant's amendment and argument has overcome the rejection of claims 42, 43, 45, 50, 75 and 76 under 35 U.S.C. 112, first paragraph directed to the phrases "as a predictor for the polymerization performance" of other monomers and the polymerization performance is used "as a figure of merit for planning".

The obviousness and written description rejection of all the claims (with the exception of claim 70) over the Van Toll and Willson reference has been withdrawn in light of applicant's amendment and argument.

Outstanding Objection (s) and/or Rejection (s)

2. Claim 70 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

To satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. Applicant's claims are directed to a method of screening potential catalysts where polymerization performance of one monomer is used "as a predictor for the polymerization performance" of other monomers. The prediction step is a mental step and there are a virtually unlimited number of acts that could read on this step. The method steps are set forth in generic language and no details on how they are to be carried out are set forth in the instant specification.

The above terminology without any description and/or exemplification of how the steps are to be carried out and *how they are interrelated to achieve the object of the invention*, does constitute a written description problem in the instant case as it is completely unclear that applicant was in possession of the claimed genus of prediction and planning. Applicant's claimed scope represents only an invitation to experiment

regarding possible prediction and planning steps. The language of the specification should describe the claimed invention so that one skilled in the art can recognize what is claimed. The disclosure must allow one skilled in the art to visualize or recognize the identity of the subject matter purportedly described.

Therefore it is deemed that the disclosure is neither representative of the claimed genus, nor does it represent a substantial portion of the claimed genus and that there is not adequate support in the instant specification for the claimed genus or a substantial portion thereof.

Response to Arguments

Applicant's arguments directed to the above written description rejection were considered but deemed nonpersuasive for the following reasons.

Applicant argues that "the scope of the presently-pending claims are entirely consistent with the scope of the invention as disclosed in the specification" and in such situations "the Examiner has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims." In this respect applicant argues that the above rejection fails to provide evidence but merely "sets forth only conclusory allegations". Accordingly, applicant concludes that the "words 'planning ' and 'predicting' readily convey distinguishing information such that one of ordinary skill in the art could visualize or recognize the identity of the members of the genus and that Applicants have invented what is claimed."

However, applicants interpretation of the rejection is misguided since the above rejection clearly provides "evidence or reasons why persons skilled in the art would not recognize in an

applicant's disclosure a description of the invention defined by the claims." In this respect the above rejection recites the following:

> Applicant's claims are directed to a method of screening potential catalysts where polymerization performance of one monomer is used "as a predictor for the polymerization performance" of other monomers and the polymerization performance is used "as a figure of merit for planning". The prediction and planning steps are mental steps and there are a virtually unlimited number of acts that could read on these steps. The method steps are set forth in generic language and no details on how they are to be carried out are set forth in the instant specification. The above terminology without any description and/or exemplification of how the steps are to be carried out and *how they are interrelated to achieve the object of the invention*, does constitute a written description problem in the instant case as it is completely unclear that applicant was in possession of the claimed genus of prediction and planning. Applicant's claimed scope represents only an invitation to experiment regarding possible prediction and planning steps.

As pointed out in the above cited portion of the rejection, a clear rationale for why the claims are not adequately described focuses on the "the prediction step" as being a mental step which is open-ended as to how to the prediction is to be carried out and as to how these steps are interrelated to achieve the desired objective. The specification although providing various "polymerization parameters" (which are not inclusive) provides no means as to how one is to perform the mental steps of prediction and apply such parameters to subsequent steps e.g. regarding whether (or if to conduct what type of assay to be selected) to conduct additional screens, polymerization or copolymerizations e.g. what is the "figure of merit" e.g. that serves to merit further experimentation. In this regard, it is noted that the specification provides NO GUIDANCE whatsoever. The specification fails to provide an algorithm(s) to assist such determinations or any guidance as to what amounts for each polymerization performance is meritorious (e.g. "as a figure of merit").

Accordingly, for all of the reasons provided in the rejection and the discussion above, the written description rejection is hereby maintained.

3. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Tol et al (WO 97/42232 - on PTO-1449) and Willson (WO 97/32208 - on PTO-1449).

Van Tol et al teach a method for polymerization of alpha olefins using various catalysts (see Abstract). The method is first carried out with the monomer of octene (reading on the limitations of the instant 37, 38 and 41), see page 28, beginning on line 9. The method is then carried out with octene and other monomers, see Example II beginning on page 28, line 26. Octene and ethylene are polymerized in Example III of the reference (page 31). Since Van Tol et al starts off by only using octene and then goes on to use other monomers in their polymerization process, this is deemed to read on the limitation where the "polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer" of claim 16 and also the limitations of claim 17. Note that Van Tol et al characterize the octane polymer by determining molecular weight and unsaturation (NMR) {Example I} and others by amount of polymer produced {Example II}. The other polymers made by incorporation of other monomers were also characterized. The reference's various classifications of different catalyst's performance while polymerizing different reactions involving olefins other than ethylene (e.g. octane) are within the scope of obtaining " a figure of merit for a particular property" addressing a particular catalysts polymerization performance. This reads on the limitations in instant claims 19, 30, 45, 50 73 and 74. The Van Tol reactions were quenched to stop the polymerization after a two hour period (page 28,

lines 16-18), reading on the limitations of claim 31 and 32. Van Tol et al teach a variety of catalyst systems, see page 33, Table 1 of the reference.

Although, the Van Tol examples only illustrate three different alpha-olefins and three different catalysts it's clear from the reference teaching as a whole that screening multiple alpha-olefins is taught by the reference. See e.g. "at least one" terminology and WO claims 1, 13 and 14 regarding "at least one" terminology related to polymerization and copolymerizations as exemplified. Similarly, although only three catalysts are exemplified, it is clear that the reference teaches the screening of a generic of catalyst candidates greater than 3, and indeed well within the scope of "at least 8 potential polymerization catalysts", as presently claimed. See e.g. abstract definition of catalyst and the WO claims, especially claim 1.

Although teach parallel polymerization (e.g. page 25, lines 28-35), Van Tol et al lack the specifics of testing an "array of at least 8 potential polymerization catalysts" by "concurrent reaction" (claim 16) and the limitations of claims 24-26, 28, 33, 42 and 43 concerning testing arrays, array format, number of elements in the array and time per assay.

However, the findings of *In re Aller* should be considered: "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Moreover, various formats for preparing and testing collections of catalysts were well known in the art at the time of filing. Willson teaches a multicell holder for

assembling and testing large numbers of catalysts as cells, spots or pellets (see Abstract; Figure 1 and page 2, lines 14-29). In preparing Willson's arrays of catalysts, "the catalyst candidate precursors can be deposited...by any convenient technique, preferably by pipette or absorbing stamp...In preferred embodiments, the deposition process will be under robotic control, similar to that used to load multicell plates in biochemical assays" (page 4, top). Willson also teaches that robotic techniques can be employed. The reference teaches that their set-up permits "the scanning of dozens of catalysts in a single set-up, often in less time than required for a single catalysts to be evaluated by conventional methods" (page 2, lines 1-11). Willson also teaches that "[o]nce the catalysts are in place on the support, any suitable technique known to the art can be used to stabilize, and/or activate the particular catalysts chosen" (page 4, bottom). The reference teaches that the invention "has utility with any reaction which can be enhanced by the presence of a catalyst ... including ...polymerization reactions..." (page 5, lines 5-11).

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art to use the catalysts and methodology of Van Tol et al in a combinatorial type setting (assay) to make and test arrays of catalysts as taught by Willson for polymerization performance based on the results of initial monomer testing (as set forth by Van Tol et al). Willson demonstrates that physical and spatial manipulation of catalyst arrays was well known in the art at the time of filing. The techniques for these manipulations result in a more automated work environment. One of ordinary skill would be motivated to use various automated manipulation techniques known to the combinatorial chemistry art

(as evidenced by the teachings of Willson) based on their known advantages. The advantages are specifically taught, for example, in Willson, that is "sharply reduce labor costs per catalyst screened".

Response to Arguments

Applicant's arguments have been fully considered but are not found persuasive. The examiner's rationale is set forth below. Also, the Declarations under 37 CFR 1.132 filed April 30, 2003 are insufficient to overcome the rejections of the claims. This is specifically discussed below.

Initially it is noted that claims 16 and 42 (and claims dependent thereon) were removed from the scope of the rejection; since these claims specifically recite the use of the 1st polymerization reaction as means for selecting (e.g. a predictor of) the catalysts for the second polymerization reaction.

Regarding, the remaining claim:

1. Applicant first argues that the Van Tol reference fails to teach the claim limitation that "the polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the performance of the potential catalysts for at least a second monomer" in view of the Van Tol examples which disclose:

a. polymerizing octene with a 1st catalyst (e.g. example 1);

b. copolymerizing octene and 1-octadecene with a 2nd catalyst (e.g. example 2); and

c. copolymerizing octene and ethylene with a 3rd catalyst (e.g. example 3).

Pointing out that the "copolymerizations of Van Tol involve distinctly different catalysts than the catalyst used to polymerize octene" applicant argues that "Van Tol fails to disclose using the

polymerization performance of the polymerization reaction(s) of the array of catalysts as a 'figure of merit' since "Van Tol neither plans or performs no further polymerizations with other monomers using the same catalysts used to polymerize the first monomer based on the initial polymerization results".

2. Applicant further argues that dependent claim 17 requires the further step of copolymerizing the first and second monomers using one of the catalysts in the array in addition to the limitations of independent claim 16, which include polymerization of the first monomer with the array of catalysts.

3. Applicant further concludes that "Wilson does not cure Van Tol's deficiencies.

Applicant's arguments were considered but deemed nonpersuasive for the following reasons.

Initially, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Secondly, applicant' argument which focuses on the Van Tol reference examples, fails to appreciate the Van Tol reference teaching taken as a whole to one of ordinary skill in the art. In this regard, the abstract referred to in the rejection clearly teaches the preparation of polymers of alpha-olefins by polymerizing: **At least one** alpha-olefin (more than one representing a library) with a catalyst and co-catalyst in which the catalyst is a transition metal complex

selected from groups 4-6 of the Periodic Table of the elements with a multidentate monoanionic ligand and with two monoanionic ligands.

Although applicant is correct that the examples only illustrate three different alpha-olefins and three different catalysts it's clear from the reference teaching as a whole that screening multiple alpha-olefins is taught by the reference. See e.g. "at least one" terminology and WO claims 1, 13 and 14 regarding "at least one" terminology related to polymerization and copolymerizations as exemplified.

Similarly, although only three catalysts are exemplified, it is clear that the reference teaches the screening of a generic of catalyst candidates greater than 3, and indeed well within the scope of "at least 8 potential polymerization catalysts", as presently claimed. See e.g. abstract definition of catalyst and the WO claims, especially claim 1.

Still further, although the examples fail to teach the screening of an array of catalyst, since the examples are directed to polmerizing one alpha olefin with one catalyst at a time, the reference clearly teaches that "The polymerization can be performed in several steps, in series as well as in parallel (see page 25, lines 28-35). Applicant is also referred to the WO claims, especially claim 12 reciting "wherein at least one member selected from the group consisting of said reduced transition metal complex and said cocatalyst is supported on at least one carrier" which is suggestive of an array.

Accordingly, the Van Tol reference clearly is NOT LIMITED to its examples but are extrapolatable to performing the various examples in parallel (e.g. in an array) as suggested by Van Tol and as further motivated by the Willson reference.

Applicant's argument that the use of different catalysts in Examples 1, 2 and 3 precludes the reference from teaching the use of the "polymerization performance as a **'figure of merit' for planning of additional screens, laboratory or commercial polymerization or copolymerization** is misguided in the following respects.

Initially, its clear that the Van Tol reference clearly encompasses polymerizing octene NOT just using one catalyst but using the generic of catalysts taught by the Van Tol reference as discussed above (again see the abstract, WO Claims, especially claims 1, 12-14 etc. as taught above).

Additionally, the Van Tol reference is consistent with the presently claimed "mental step" of selecting a first alpha olefin other than ethylene (e.g. octene in Example 1) as a "reference" for evaluating further polymerization and copolymerization utilizing other alpha olefins in view of the following factors:

I. The order of the Examples as argued by applicant and the description thereof:

a. polymerizing octene with a 1st catalyst (e.g. example I);

b. copolymerizing octene and 1-octadecene with a 2nd catalyst (e.g. example II); and

c. copolymerizing octene and ethylene with a 3rd catalyst (e.g. example III).

The order suggests use of "octene" as the reference olefin and the Examples themselves suggest the extrapolation of "octene" to copolymerization comprising octene and in (co) polymerization directed to lower olefins, as illustrated by the following phrase in Example III: "This example shows that the polymerization of higher olefins is also possible in the presence of lower olefin, **such as ethylene**, under effective polymerization conditions using the catalyst system of this invention" This interpretation is consistent with the Van Tol reference teaching including the

Abstract/Claims especially the claims, particularly claims 13 (e.g. "wherein at least one olefin is chosen from alpha-olefins having from 8 to 20 carbons)") and claim 14 ("wherein at least one further alpha-olefin is chosen from the group consisting of ethylene, propylene and styrene" : e.g. "lower olefins").

Additionally, Van Tol et al characterizes the octane polymer by determining molecular weight and unsaturation (NMR) {Example I} and others by amount of polymer produced {Example II}. The other polymers made by incorporation of other monomers were also characterized. All of these parameters relate to "determining the polymerization performance of. catalysts" which are within the scope of the presently claimed invention. The reference's various classifications of different catalyst's performance while polymerizing different reactions involving olefins other than ethylene (e.g. octane) are within the scope of obtaining " a figure of merit for a particular property" addressing a particular catalysts polymerization performance.

Significantly, Applicant's *specification states that "the step of using the determination as a predictor* ***comprises copolymerizing the first and second monomer using the catalysts"*** (page 11, lines 24-25). The above-mentioned teachings of Van Tol clearly read on this and thus also teach "further comprising" copolymerization step of claim 17.

Accordingly, as stated in the rejection, since Van Tol et al starts off by only using octene as the reference alpha olefin (e.g. "first monomer") and then goes on to use other monomers in their polymerization process, this is deemed to read on the limitation where the "polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer".

It is duly noted that there are no additional limitations set forth in the instant claims as to what constitutes the step of "polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer". That is, there are ***no*** specific values or algorithms that are to be used in making this prediction set forth in the instant claims. As previously stated in the last action, steps such as "prediction" and "planning" are mental steps as currently claimed and the prior art process could be used for this purpose (i.e. prior art capable of performing the intended use). See paragraph 14 below. Additionally, *Applicant's specification states that "the step of using the determination as a predictor* ***comprises copolymerizing the first and second monomer using the catalysts"*** (page 11, lines 24-25). The above-mentioned teachings of Van Tol clearly read on this.

Also, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. overcoming a benchmark of performance; comparative numerical property; "setting a benchmark for the figure of merit high enough so that a prediction can be made" see, e.g. Response, page 4) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, it is not at all clear that such limitations are even present in the instant specification.

On the whole, applicant's arguments are directed to the step of using the determination as a predictor as being not explicitly taught by the prior art.

However, some of these "steps" are set forth in the preamble of the method. Note that the preamble is not given the effect of a limitation unless it breathes life and meaning into the claim. In order to limit the claim, the preamble must be "essential to point out the invention defined by the claim." *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951) (discussed below). A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) {see MPEP § 2111.02}. The references that are set forth in the rejection above clearly teach the steps of the claimed method, thus the method is deemed to be *prima facie* obvious. Applicant argues that the preamble is "more than a mere statement of purpose". The examiner has not completely disregarded the preamble, and has given some of it patentable weight as evidenced by the rejection. However, some of the "steps" set forth in the preamble have not been given patentable weight (i.e. using performance as a predictor) or to the extent that they are given any weight are deemed to be met by the reference teaching.

Applicants argue that steps such as "prediction" differentiate their process from the prior art; however, these are mental steps as currently claimed and the prior art process could be used for this purpose (i.e. prior art capable of performing the intended use). In response to applicants argument that there is "tremendous manipulative difference" it is the examiner's position that such a difference is not evident from the language of the claims. Applicants also "submit that the prediction step is indirectly reciting an algorithm". Indirectly reciting an algorithm is *not sufficient* to lend the claim limitations patentable weight. Applicant then goes on to further

describe the prediction and planning steps; however, most of the steps/acts referred to are not positively recited in the instant claims.

Thus, the examiner's position is that the teachings of Van Tol et al and Willson render the method of the instant claims *prima facie* obvious in view of the fact that Van Tol et al starts off by only using octene and then goes on to use other monomers in their polymerization process and the teaching of Willson that various formats for preparing and testing collections of catalysts were well known in the art at the time of filing. As stated in the rejection, Van Tol et al teach initial monomer testing and Willson demonstrates that physical and spatial manipulation of catalyst arrays was well known in the art at the time of filing.

Applicants state that there is no motivation to combine the two references. The examiner respectfully disagrees. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). As stated in the rejection, it would have been obvious to one of ordinary skill in the art to use the catalysts and methodology of Van Tol et al in a combinatorial type setting (assay) to make and test arrays of catalysts as taught by Willson for polymerization performance based on the results of initial monomer testing (as set forth by Van Tol et al). Willson demonstrates that physical and spatial manipulation of catalyst arrays was well known in the art at the time of filing. The techniques for these manipulations result in a more automated work environment. One of ordinary skill would be motivated to use various automated manipulation techniques known to the

combinatorial chemistry art (as evidenced by the teachings of Willson) based on their known advantages. The advantages are specifically taught, for example, in Willson, that is "sharply reduce labor costs per catalyst screened".

In this case, the examiner maintains that the *combined* teachings of the cited references render the claimed invention obvious. The teachings referred to above are strong motivation. The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983).

With respect to the Declaration of Richard F. Jordan, this Declaration is insufficient to overcome the rejections. This is because the Declaration merely states conclusions (opinions) and lacks factual support for the expert's opinion. "Although an affidavit or declaration which states only conclusions may have some probative value, such an affidavit or declaration may have little weight when considered in light of all the evidence of record in the application." *In re Brandstadter*, 484 F.2d 1395, 179 USPQ 286 (CCPA 1973).

Also, the Declaration refers to steps or elements which are not present in the instant claims. For example, paragraph 6 of the Declaration refers to using a monomer which is "easy to handle" to predict performance for monomers "more difficult to handle". Also, paragraph 9 of the Declaration refers to "particular property being measured for threshold performance" and that such is "typically set sufficiently high". Thus it is not commensurate in scope with the claimed invention. See also paragraph 29 below.

With respect to the Declaration of Vincent J. Murphy and the commercial success of the invention, the examiner would like to set forth several points. First, the proffered evidence is ***not*** commensurate in scope with the claimed invention (see MPEP § 716.03(a)). In order to be commensurate is scope with the claims, the commercial success must be due to claimed features, and not due to unclaimed features. *Joy Technologies Inc. v. Manbeck*, 751 F. Supp. 225, 229, 17 USPQ2d 1257, 1260 (D.D.C. 1990), aff'd, 959 F.2d 226, 228, 22 USPQ2d 1153, 1156 (Fed. Cir. 1992). Second, see MPEP § 716.03: An applicant who is asserting commercial success to support its contention of nonobviousness bears the burden of proof of establishing a nexus between the claimed invention and evidence of commercial success. The term "nexus" designates a factually and legally sufficient connection between the evidence of commercial success and the claimed invention so that the evidence is of probative value in the determination of nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 7 USPQ2d 1222 (Fed. Cir. 1988).

The examiner's position is that the nexus between the claimed invention and evidence of commercial success *is not present*. The evidence presented is directed to *very specific* sets of experiments using defined conditions. The instant claims are not limited to such. Moreover, it appears that there are many unclaimed features that are described in the evidence. For example, the Declaration refers to "particular property being measured for comparison to a threshold performance" and that such is "typically set sufficiently high" (paragraph 5). This Declaration also refers to an "easy to screen probe monomer" being used to predict the properties of a "more difficult" polymerization (paragraph 8). Thus it is not commensurate in scope with the claimed invention.

To be pertinent to the issue of nonobviousness, the commercial success of devices falling within the claims of the patent must flow from the functions and advantages disclosed or inherent in the description in the specification. Furthermore, the success of an embodiment within the claims may not be attributable to improvements or modifications made by others. *In re Vamco Machine & Tool, Inc.*, 752 F.2d 1564, 224 USPQ 617 (Fed. Cir. 1985).

Also, the collaborative research effort described in the Declaration is not sufficient to prove commercial success. Evidence of licensing is a secondary consideration which must be carefully appraised as to its evidentiary value because licensing programs may succeed for reasons unrelated to the unobviousness of the product or process, e.g., license is mutually beneficial or less expensive than defending infringement suits. *EWP Corp. v. Reliance Universal, Inc.*, 755 F.2d 898, 225 USPQ 20 (Fed. Cir. 1985).

Accordingly, the obviousness rejection of the claims is maintained.

New Objection (s) and/or Rejection (s)

Claim Rejections - 35 USC § 112

1. Claims 16, 19, 24-26, 28, 30-33, 37, 38, 42-43, 45, 50, 70 and 73-76 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (Lack of Written Description).

The presently claimed invention (e.g. claims 16, 42 and 70) is broadly drawn to:

A method for screening 8 or more catalysts for polymerization performance between a "1st monomer" and a different "2nd monomer comprising:

a. determining "polymerization performance" in a first "concurrent" polymerization reaction between 8 or more catalysts and a "1st non-ethylene olefinic monomer";

b. selecting one or more catalysts based on "polymerization performance" in the first polymerization reaction" and reacting the catalyst(s) with "the first monomer" and the "second monomer" to form copolymers or "higher-order" polymers.

It is noted that:

a. The first polymerization encompasses both homopolymerizing the "1st non-ethylene olefinic monomer" AND copolymerizing the "1st non-ethylene olefinic monomer" with one or more additional monomers;

b. The "2nd monomer" is structurally undefined as is those monomers which result in "high order" polymers: and thus is purely functionally defined; and

c. Additionally, the breadth of possible individual catalyst(s), catalyst systems and activating compound(s) is completely open ended. Thus the claimed invention is not limited to any particular class of catalyst.

Regarding the catalyst art, as illustrated by organometallic complexes which may function as catalysts, yield and activity and selectivity are dependent upon numerous factors any of which may result in catalyst inactivity e.g. the effectiveness of the cocatalyst, the type and amount of modifier, and the suitability of the ancillary ligand

precursor, metal precursor and reaction conditions to form an effective catalyst species in high yield are *unpredictable*.

In support of the present claims, the specification is directed to illustrating the use of 1-octene hompolymerization in liquid phase as a primary screen for optimal catalyst polymerization selection from among a library of organometallic catalysts for use in ethylene/octane copolymerization.

With respect to adequate disclosure of the scope of the presently claimed generic applicant is referred to the discussion in *University of California v. Eli Lilly and Co.* U.S. Court of Appeals Federal Circuit (CA FC) 43 USPQ2d 1398 7/22/1997 Decided July 22, 1997 No. 96-1175 regarding disclosure. For adequate description requires *representative examples* which provide reasonable assurance to one skilled in the art that the compounds falling within the scope, both possess the alleged utility and additionally demonstrate that *applicant had possession of the full scope of the claimed invention*. See In re Riat et al. (CCPA 1964) 327 F2d 685, 140 USPQ 471; In re Barr et al. (CCPA 1971) 444 F 2d 349, 151 USPQ 724 (for enablement) and *University of California v. Eli Lilly and Co* cited above (for disclosure). The more unpredictable the art the greater the showing required (e.g. by "representative examples") for both enablement and adequate disclosure.

Like Lilly, applicant asserts that there is a means of obtaining a desired generic, with a non-commensurate showing of libraries and monomers; however, this is not relevant to the disclosure requirement in which the applicant must demonstrate

possession of the claimed scope at the time of filing. Accordingly, applicant is not in possession of the presently claimed invention.

Claim Rejections - 35 USC § 103

4. Claims 16, 19, 24-26, 28, 30-33, 37, 38, 42-43, 45, 50, 70 and 73-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lundeen et al. US Pat. No. 5,236,998 and Weinberg et al. US Pat. No. 6,756,195 96/04: filed 7/97 or earlier).

The presently claimed invention (e.g. claims 16, 42 and 70) is broadly drawn to:

A method for screening 8 catalysts (claim 42) or more (claims 16 or 70) for polymerization performance between a "1st monomer" and a different "2nd monomer comprising:

a. determining "polymerization performance" in a first "concurrent" polymerization reaction between 8 or more catalysts and a "1st non-ethylene olefinic monomer";

b. selecting one or more catalysts based on "polymerization performance" in the first polymerization reaction" and reacting the catalyst(s) with "the first monomer" and the "second monomer" to form copolymers (claims 16, 42 and 70) or "higher-order" polymers (claim 70).

It is noted that the structure of the "second polymer" is undefined and the the first polymerization encompasses both homopolymerizing the "1st non-ethylene olefinic monomer" AND copolymerizing the "1st non-ethylene olefinic monomer" with one or more additional monomers.

Lundeen discloses parallel olefin (e.g. ethylene) polymerization utilizing the placement of one or more (e.g. two) catalysts (e.g. a library) into two or more physically separate "parallel reactors" possessing a plurality of regions under polymerization conditions for the purposes of optimizing the reaction conditions (e.g. temperature and pressure). The Lundeen process comprises:

a. determining "polymerization performance" in a first "concurrent" polymerization reaction between 1 or more catalysts (e.g two) and a "1st non-ethylene olefinic monomer" (e.g. alpha olefin having 3-12 carbon atoms) and ethylene (e.g. a 2nd monomer); and

b. selecting one or more catalysts (e.g. the same catalysts as in the 1st polymerization) based on "polymerization performance" in the first polymerization reaction" and reacting the catalyst(s) with "the first monomer" (e.g. the alpha olefin having 3-12 carbon atoms) and the "second monomer" (e.g. ethylene) to form copolymers (claims 16, 42 and 70) or "higher-order" polymers (claim 70). See e.g. abstract; examples; claims.

The Lundeen reference method differs from the presently claimed method by failing to teach optimized catalyst polymerization utilizing a library of 8 or more catalysts.

However, Weinberg et al. teaches a method for optimizing polymerization of monomers (e.g. alpha olefins) by parallel screening libraries of 8 or more catalysts in order to discover new catalysts or optimize existing catalysts (e.g. "figure of merit"). See abstract; examples, claims.

Thus, it would have been obvious to one of ordinary skill in the art at the time of applicant's invention to apply the Weinberg et al. method of parallel screening of larger libraries of catalysts to the Lundeen method in order to discover new catalyst and/or optimize existing catalysts with a reasonable expectation of success.

5. Claims 16, 19, 24-26, 28, 30-33, 37, 38, 45, 50, 70 and 73-74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Tol et al (WO 97/42232 - on PTO-1449), Willson (WO 97/32208 - on PTO-1449) and Weinberg et al. US Pat. No. 6,756,195 96/04: filed 7/97 or earlier).

Van Tol et al teach a method for polymerization of alpha olefins using various catalysts (see Abstract). The method is first carried out with the monomer of octene (reading on the limitations of the instant 37, 38 and 41), see page 28, beginning on line 9. The method is then carried out with octene and other monomers, see Example II beginning on page 28, line 26. Octene and ethylene are polymerized in Example III of the reference (page 31). Since Van Tol et al starts off by only using octene and then goes on to use other monomers in their polymerization process, this is deemed to read on the limitation where the "polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer" of claim 16 and also the limitations of claim 17. Note that Van Tol et al characterize the octane polymer by determining molecular weight and unsaturation (NMR) {Example I} and others by amount of polymer produced {Example II}. The other polymers made by incorporation

of other monomers were also characterized. The reference's various classifications of different catalyst's performance while polymerizing different reactions involving olefins other than ethylene (e.g. octane) are within the scope of obtaining " a figure of merit for a particular property" addressing a particular catalysts polymerization performance. This reads on the limitations in instant claims 19, 30, 45, 50 73 and 74. The reactions were quenched to stop the polymerization after a two hour period (page 28, lines 16-18), reading on the limitations of claim 31 and 32. Van Tol et al teach a variety of catalyst systems, see page 33, Table 1 of the reference.

Although, the Van Tol examples only illustrate three different alpha-olefins and three different catalysts it's clear from the reference teaching as a whole that screening multiple alpha-olefins is taught by the reference. See e.g. "at least one" terminology and WO claims 1, 13 and 14 regarding "at least one" terminology related to polymerization and copolymerizations as exemplified. Similarly, although only three catalysts are exemplified, it is clear that the reference teaches the screening of a generic of catalyst candidates greater than 3, and indeed well within the scope of "at least 8 potential polymerization catalysts", as presently claimed. See e.g. abstract definition of catalyst and the WO claims, especially claim 1.

Although teaching parallel polymerization (e.g. page 25, lines 28-35), Van Tol et al lack the specifics of testing an "array of at least 8 potential polymerization catalysts" by "concurrent reaction" (claim 16) and the limitations of claims 24-26, 28, 33, 42 and 43 concerning testing arrays, array format, number of elements in the array and time per assay.

However, the findings of *In re Aller* should be considered: "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Moreover, various formats for preparing and testing collections of catalysts were well known in the art at the time of filing.

Willson teaches a multicell holder for assembling and testing large numbers of catalysts as cells, spots or pellets (see Abstract; Figure 1 and page 2, lines 14-29). In preparing Willson's arrays of catalysts, "the catalyst candidate precursors can be deposited...by any convenient technique, preferably by pipette or absorbing stamp...In preferred embodiments, the deposition process will be under robotic control, similar to that used to load multicell plates in biochemical assays" (page 4, top). Willson also teaches that robotic techniques can be employed. The reference teaches that their set-up permits "the scanning of dozens of catalysts in a single set-up, often in less time than required for a single catalysts to be evaluated by conventional methods" (page 2, lines 1-11). Willson also teaches that "[o] nce the catalysts are in place on the support, any suitable technique known to the art can be used to stabilize, and/or activate the particular catalysts chosen" (page 4, bottom). The reference teaches that the invention "has utility with any reaction which can be enhanced by the presence of a catalyst ... including ...polymerization reactions..." (page 5, lines 5-11).

Additionally, Weinberg et al. teaches a method for optimizing (e.g. "figure of merit") polymerization of monomers (e.g. alpha olefins) by parallel screening libraries of

8 or more catalysts in order to discover new catalysts and/or optimize existing catalysts. See abstract; examples, claims. Weinberg teaches that catalysts may be used to polymerize ethylenically and/or acetylenically unsaturated monomers having from 2 to 100,000 carbon atoms, either alone, or in combination. See e.g. col. 14; column 28.

Therefore, it would have been *prima facie* obvious to one of ordinary skill in the art to use the catalysts and methodology of Van Tol et al in a combinatorial type setting (assay) to make and test arrays of catalysts as taught by Willson and/or Weinberg for polymerization performance based on the results of initial monomer testing (as set forth by Van Tol et al). Weinberg and/or Willson demonstrates that physical and spatial manipulation of catalyst arrays was well known in the art at the time of filing. The techniques for these manipulations result in a more automated work environment. One of ordinary skill would be motivated to use various automated manipulation techniques known to the combinatorial chemistry art (as evidenced by the teachings of Willson/Weinberg) based on their known advantages. The advantages are specifically taught, for example, in Willson/Weinberg, that is reduce labor costs and time per catalyst screened. The Weinberg reference further teaches high throughput screening for obtaining optimized catalysts for use in BOTH homo- and co- polymerization reactions involving ethylene and higher polymers/copolymers.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bennett Celsa whose telephone number is 571-272-0807. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-272-0811. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bennett Celsa
Primary Examiner
Art Unit 1639

BC
February 2, 2005